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Junction for multidirectional links for bars of various supporting structures

The present invention relates to a junction for multidirectional links for bars of various supporting structures, such as scaffolding, store cabinets or the like.

5 It is a question of storing and bringing in situ bars which are independent of one another but equipped with means which cannot be lost, making it possible to constitute junctions for linking these bars in any directions, very quickly and without using tools, in order to construct the desired structure. These junctions must be extremely robust and must not risk suddenly
10 coming apart. One advantage of the individualisation of the bars is that they may pass through narrow openings to arrive at the site of installation, which is a necessity in certain installations, such as scaffolding in tanker holds. A further advantage resides in the possibility of a greater diversity of structures.

15 A junction known by French Patent No. 1 093 342 comprises a collar or rosette welded on a tubular upright and defining conical holes distributed over its periphery. The ends of the converging tubular bars to be connected to this upright are fast with carrot wedges adapted to be engaged in the above-
20 mentioned holes and maintained in position by cotters.

It is an object of the present invention to intensify

the locking of the transverse bars and to ensure absolute safety of said locking, this enabling the complementary cotters to be eliminated.

It is a further object to simplify and facilitate assembly, to increase robustness of the link so that locking and unlocking can be effected by means of a hammer, without drawback, and to control the orientation of the transverse bars.

According to the present invention there is provided a junction for multidirectional links for bars of a supporting structure comprising a collar or rosette fast with an upright bar and defining windows for the engagement of cotters and U-shaped staples adapted to cover the rosette so that a web of each staple fast with a converging bar is located in front and its lateral arms extend above and below to come into contact by their ends with the upright bar, wherein the upper arm of each staple is fast with one of these cotters of which the sloping face opposite the upright bar extends so that its distance from the surface of contact defined by the ends of the two arms of the staple increases upwardly and, by cooperating with the peripheral edge of the corresponding window in the rosette in which said cotter is engaged, causes said ends of the arms to move towards the upright bar and provoke an intense tightening pressure thereof at the same time as a jamming, and the free end of the cotter is spaced apart from the lower arm of the staple in order to arrange a passage for the rosette.

The invention will be more readily understood on reading the following description with reference to the accompanying drawings, in which:

Figure 1 is a view in elevation of the junction according to the invention;

Figure 2 is a plan view from above, taken in section along line II-II of Figure 1.

Referring now to the drawings, the junction is adapted to connect a tubular upright 1 with transverse tubular bars 2, three in number, perpendicular to one another and to the upright in the example shown. Of course, the bars may be more or less numerous and they may have any angle of incidence.

In any case, the upright 1 is rendered fast, particularly by welding, with a collar or rosette 3 extending perpendicularly and at the different levels where bars 2 may be mounted. This rosette 3 defines rectangular windows 4 distributed equiangularly, every 90° in the example shown.

Each bar 2 is itself rendered fast, particularly by welding, with the web 5 of a staple 6 adapted to cover the rosette. Thus, the web 5 is located in front and the arms 7 and 8 of this staple extend respectively above and below the said rosette so that their free ends can come into contact with the upright 1.

A cotter 9 is an integral part of the staple 6 and may be made by die-stamping in the upper arm 7 or be made fast therewith by welding for example. The cotter extends in a direction substantially parallel to the upright, but there is a sufficient free space 10 between the end of this cotter and the lower arm 8 of the staple for the passage of the rosette.

It is important to observe that the cotter has, opposite the upright 1, a sloping face 11 adapted to cooperate with the peripheral edge 12 of the corresponding window 4 when the staple 6 is mounted, i. e. when its cotter 9 is engaged in said window and the free ends of its arms 7, 8 bear against the upright. In this position, the distance of the sloping face 11 to said upright increases upwardly. Consequently, by striking the upper arm 7 with a hammer or the like, the reaction of the edge 12 of the rosette on the sloping face 11 causes the approach of the ends of the arms 7, 8 relatively to the upright 1 and their intense tightening thereagainst by effecting jamming by wedge effect. Of course, to loosen the cotter 9, it suffices to strike on the lower arm 8 and the staple may then be easily dismantled. It is interesting to note that, if the cotter were inadvertently unblocked, due to a shock, for example, the bar 2 would not come apart since, to extract the staple 6, it must not only be raised, but also separated at the correct level from the upright.

To centre the staple, it may be advantageous to provide notches 13 on the free ends of the arms 7, 8 and possibly to arrange a minimum clearance between the lateral edges 14 of the windows and the lateral faces 13 of the cotter 9.

The invention is not limited to the embodiment described and shown in detail, as various modifications may be made thereto without departing from the scope thereof.

The junction according to the invention is applicable to the construction of scaffolding, store cabinets and, generally, to any structure with dismountable bars.

CLAIMS

1. A junction for multidirectional links for bars of a supporting structure comprising a collar or rosette fast with an upright bar and defining windows for the engagement of cotters and U-shaped staples adapted to cover the rosette so that a web of each staple fast with a converging bar is located in front and its lateral arms extend above and below to come into contact by their ends with the upright bar, wherein the upper arm of each staple is fast with one of these cotters of which the sloping face opposite the upright bar extends so that its distance from the surface of contact defined by the ends of the two arms of the staple increases upwardly and, by cooperating with the peripheral edge of the corresponding window in the rosette in which said cotter is engaged, causes said ends of the arms to move towards the upright bar and provoke an intense tightening pressure thereof at the same time as a jamming, and the free end of the cotter is spaced apart from the lower arm of the staple in order to arrange a passage for the rosette.

2. A junction as claimed in claim 1 in which the upright bar is tubular.

3. A junction substantially as described hereinabove and illustrated in the accompanying drawings.

4. A supporting structure having a junction as claimed in any preceding claim.

5. A supporting structure as claimed in claim 4 consisting of scaffolding or being a store cabinet.

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